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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,128	06/30/2006	Koichiro Tanaka	0756-7726	9907

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EXAMINER	
GARCIA, JOANNIE A	

ART UNIT	PAPER NUMBER
2895	

MAIL DATE	DELIVERY MODE
09/14/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,128	TANAKA ET AL.	
	Examiner	Art Unit	
	JOANNIE A. GARCIA	2895	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *14-39* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *14-39* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/16/2011*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14-23, 25-35, and 37-39, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al (US 2003/0216012 A1), and further in view of Tanaka et al'223 (US 2004/0266223 A1), Tanaka et al'182 (US 2003/0086182 A1), Sawada et al (US 2006/0138102 A1), and the following comments.

Regarding claims 14 and 26, Sasaki et al discloses a method for manufacturing a semiconductor device comprising forming a semiconductor film 36 over a substrate 12 (Figures 6 and 22, and Paragraphs 0069 and 0132), blocking end portions of a first laser beam emitted from a laser oscillator 71 or 72 by a lens 76 to produce a second laser beam (Figure 22, and Paragraph 0133), producing the second laser beam into a third laser beam by using a condensing lens 77 (Figure 22, and Paragraph 0133), irradiating the semiconductor film with the third laser beam, and moving the third laser beam relative to the semiconductor film (Figure 22, and Paragraphs 0018, and 0135-0137).

Also regarding claims 14 and 26, Sasaki et al does not teach blocking end portions of the first laser beam emitted from the laser oscillator 71 or 72 by a slit to produce the second laser beam. Tanaka et al'223 discloses blocking end portions of a first laser beam emitted from a laser oscillator 1101 by a slit or lens

to produce a second laser beam (Figures 1A, 1B, 3A, and 3B, and Paragraphs 0031, 0037, 0038, 0061-0067, 0080, and 0084). It would have been obvious to one of ordinary skill in the art to combine the teachings of Sasaki et al and Tanaka et al'223, to enable blocking end portions of the first laser beam emitted from the laser oscillator 71 to produce the second laser beam of Sasaki et al to be performed, by using a slit or lens, according to the teachings of Tanaka et al'223, because in such process, the method of Tanaka et al'223, would be used according to its disclosed intended purpose and would therefore have reasonably been expected by one of ordinary skill in the art to yield the predictable results of blocking end portions of the first laser beam emitted from the laser oscillator 71 to produce the second laser beam of Sasaki et al by using a slit or lens, and also, it would improve an operating characteristic and reliability of a semiconductor device (See Tanaka et al'223, Paragraph 0039).

Regarding claims 15 and 27, Sasaki et al discloses a method for manufacturing a semiconductor device comprising forming a semiconductor film 36 over a substrate 12 (Figures 6 and 22, and Paragraphs 0069 and 0132), combining a first laser beam emitted from a first laser oscillator 71 whose polarizing direction has been changed by a waveplate 78 with a second laser beam emitted from a second laser oscillator 72 by a polarizer 80, the combined laser beam serving as a third laser beam (Figure 22 and Paragraphs 0132 and 0134), blocking end portions of the third laser beam by a slit 76 to produce a fourth laser beam (Figure 22, and Paragraph 0133), producing the fourth laser beam into a fifth laser beam by using a condensing lens 77 (Figure 22, and

Paragraph 0133), irradiating the semiconductor film with the fifth laser beam, and moving the fifth laser beam relative to the semiconductor film (Paragraphs 0018, and 0135-0137).

Also regarding claims 15 and 27, Sasaki et al does not teach blocking end portions of the first laser beam emitted from the laser oscillator 71 by a slit to produce the second laser beam. Tanaka et al'223 discloses blocking end portions of a first laser beam emitted from a laser oscillator 1101 by a slit or lens to produce a second laser beam (Figures 1A, 1B, 3A, and 3B, and Paragraphs 0031, 0037, 0038, 0061-0067, 0080, and 0084). It would have been obvious to one of ordinary skill in the art to combine the teachings of Sasaki et al and Tanaka et al'223, to enable blocking end portions of the first laser beam emitted from the laser oscillator 71 to produce the second laser beam of Sasaki et al to be performed, by using a slit or lens, according to the teachings of Tanaka et al'223, because in such process, the method of Tanaka et al'223, would be used according to its disclosed intended purpose and would therefore have reasonably been expected by one of ordinary skill in the art to yield the predictable results of blocking end portions of the first laser beam emitted from the laser oscillator 71 to produce the second laser beam of Sasaki et al by using a slit or lens, and also, it would improve an operating characteristic and reliability of a semiconductor device (See Tanaka et al'223, Paragraph 0039).

Regarding claims 16 and 28, Sasaki et al discloses that the condensing lens is a convex spherical lens (Paragraph 0133).

Regarding claims 17 and 29, Sasaki et al discloses that the laser beam is a continuous wave laser beam (Paragraph 0132).

Regarding claims 25 and 37, Sasaki et al discloses that an image at the mirror and an image on the irradiation surface are in a conjugated relation by the condensing lens 77 (Figure 22, and Paragraphs 0132-0134).

Regarding claims 18, 21, 22, 30 and 33, Sasaki et al does not teach that the laser beam is emitted from a YAG laser, YVO_4 laser, $YAlO_3$ laser, an alexandrite laser, a Ti:sapphire laser, an Ar gas laser, or a Kr gas laser, with a repetition rate of more than 10 MHz Tanaka et al discloses a laser beam emitted from a YAG laser, YVO_4 laser, $YAlO_3$ laser, an alexandrite laser, a Ti:sapphire laser, an Ar gas laser, or a Kr gas laser (Paragraphs 0018, 0023, 0027, 0106, 0109, and 0110). It would have been obvious to one of ordinary skill in the art to combine the teachings of Sasaki et al and Tanaka et al, to enable the laser beam 71 and 72 of Sasaki et al to be performed, according to the teachings of Tanaka et al, because in such a process the method of Tanaka et al would be used according to it's disclosed intended purpose and would therefore have reasonably been expected by one of ordinary skill in the art to yield the predictable results of achieving the laser beams 71 and 72 of Sasaki et al, and also, it would improve crystallinity (See Tanaka et al, Paragraph 0011).

Regarding claims 19, 20, 31 and 32, Sasaki et al does not teach that the laser beam has a pulse width in femtoseconds, and that the laser beams if a Ti:sapphire laser. Sawada et al discloses a laser beam having a pulse width in femtoseconds, and that the laser beams is a Ti:sapphire laser (Paragraphs 0008,

0048, and 0058). It would have been obvious to one of ordinary skill in the art to combine the teachings of Sasaki et al and Sawada et al, to enable the laser beam 71 and 72 of Sasaki et al to be performed, according to the teachings of Tanaka et al, because in such a process the method of Sawada et al would be used according to it's disclosed intended purpose and would therefore have reasonably been expected by one of ordinary skill in the art to yield the predictable results of achieving the laser beams 71 and 72 of Sasaki et al, and also, it would provide a suitable method for processing small parts such as those for a micromachine (See Sawada et al, Paragraph 0058).

Regarding claims 23 and 35, Sasaki et al discloses the claimed invention except for a width of a microcrystal region to a laser irradiation region formed by the laser irradiation apparatus ranges from 1 to 20 pm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine suitable width for the microcrystal region in the process of Sasaki et al to be performed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,*105 USPQ 233.

In addition, the selection of the suitable width, it's obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir.

1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed suitable width, or any unexpected results arising therefrom. Where patentability it's said to be based upon particular chosen suitable widths, or upon another variable recited in a claim, the Applicant must show that the chosen suitable widths, are critical. *In re Woodruf*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Regarding claims 38 and 39, Sasaki et al discloses wherein the polarizing direction of the first laser beam has been changed by a waveplate 81 (Figure 22).

Response to Arguments

Applicant argues that Sasaki et al nor Tanaka et al'223 teach blocking end portions of the first laser beam emitted from the laser oscillator 71 or 72 by a slit to produce the second laser beam. However, Tanaka et al'223 discloses blocking end portions of a first laser beam emitted from a laser oscillator 1101 by a slit or lens to produce a second laser beam (Figures 1A, 1B, 3A, and 3B, and

Paragraphs 0031, 0037, 0038, 0061-0067, 0080, and 0084), and therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Sasaki et al and Tanaka et al'223, to enable blocking end portions of the first laser beam emitted from the laser oscillator 71 or 72 to produce the second laser beam of Sasaki et al to be performed, by using a slit or lens, according to the teachings of Tanaka et al'223, because in such process, the method of Tanaka et al'223, would be used according to its disclosed intended purpose and would therefore have reasonably been expected by one of ordinary skill in the art to yield the predictable results of blocking end portions of the first laser beam emitted from the laser oscillator 71 or 72 to produce the second laser beam of Sasaki et al by using a slit or lens.

Applicant argues that Sasaki et al nor Tanaka et al'223 teach an image at the mirror/slit and an image on the irradiation surface are in a conjugated relation by the condensing lens 77 (Figure 22, and Paragraph 0132-0134). However, Sasaki et al and Tanaka et al'223 disclose an image at the mirror/slit and an image on the irradiation surface are in a conjugated relation by the condensing lens 77, as shown in Figure 22, and as disclosed in Paragraphs 0132-0134.

Allowable Subject Matter

Claim 24 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joannie García, whose telephone number is (571) 272-1861. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Drew Richards, can be reached on (571) 272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/N. Drew Richards/
Supervisory Patent Examiner, Art Unit 2895

/JAG/
September 7, 2011

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